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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,485	08/17/2001	Shinichi Tsutsumi	SON-2189	3667

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EXAMINER	
HASHEM, LISA	

ART UNIT	PAPER NUMBER
2645	

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/931,485	TSUTSUMI, SHINICHI	
	Examiner	Art Unit	
	Lisa Hashem	2645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2 and 4-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *2 and 4-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The indicated allowability of claims 2, 4-8, and 9 are withdrawn in view of the newly discovered reference(s) to: U.S. Patent No. 6,097,974 by Camp, Jr. et al, hereinafter Camp, for claim 9 and Camp in view of U.S. Patent No. 6,094,564 by Tomiya et al, hereinafter Tomiya for claims 2 and 5-8. Rejections based on the newly cited reference(s) follow.

Claim Objections

2. Claim 2 is objected to because of the following informalities: The terms "BPSK" and "IF" are not defined by the claim. Appropriate correction is required.

3. Claim 2 is objected to because of the following informalities: The phrase "wherein said IF stage has at least one of a variable gain amplifier for amplifying the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system and a quadrature demodulator for subjecting the intermediate-frequency signals that have been passed through the variable gain amplifier to quadrature demodulation for output" is not clear. The selection of either one of a variable gain amplifier or quadrature modulator is not clear on the basis that the quadrature modulator requires the IF signals to pass through the variable gain amplifier. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 9 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Camp.

Regarding claim 9, Camp discloses a portable terminal apparatus comprising (column 5, line 51 – column 6, line 43): a first receiving system for receiving a quadrature modulated signal and converting the quadrature modulated signal into an intermediate-frequency signal for output (Figure 7, 611); a second receiving system comprising at least one system for receiving a BPSK modulated signal and converting the BPSK modulated signal into an intermediate-frequency signal for output (Figure 7, 612); an IF stage for processing both the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system (Figure 7, 646); and a signal processing system for processing the signal of said first receiving system that has been passed through said IF stage and the signal of said second receiving system that has been passed through said IF stage (Figure 7: 650, 652).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Camp in view of Tomiya.

Regarding claim 2, Camp discloses a portable terminal apparatus comprising (column 5, line 51 – column 6, line 43): a first receiving system for receiving a quadrature modulated signal and converting the quadrature modulated signal into an intermediate-frequency signal for output (Figure 7, 611), wherein a radiotelephone receiver handles a quadrature modulated signal (see page 2, lines 15-17 of the instant application '09/931,485'); a second receiving system comprising at least one system for receiving a binary phase shift key (BPSK) modulated signal and converting the BPSK modulated signal into an intermediate-frequency signal for output (Figure 7, 612), wherein a second receiving system or global positioning system (GPS) receiver handles a BPSK modulated signal (see page 2, lines 17-18 of the instant application '09/931,485'); an intermediate frequency (IF) stage for processing both the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system (Figure 7, 646); and a signal processing system for processing the signal of said first receiving system that has been passed through said IF stage and the signal of said second receiving system that has been passed through said IF stage (Figure 7: 650, 652), wherein said IF stage has at least one of a quadrature demodulator for subjecting the intermediate-

frequency signals that have been passed through to quadrature demodulation for output (Figure 7: 646, 650; column 3: lines 28-29, lines 49-52, and lines 65-67; column 4, lines 8-10).

Camp does not disclose an IF stage has at least one of a variable gain amplifier.

Tomiya discloses a portable terminal apparatus comprising (Figure 2): a first (Figure 2, 60) and a second receiving system (Figure 2, 62) for receiving a quadrature modulated signal and converting the quadrature modulated signal into an intermediate-frequency signal for output (column 5, lines 44-50; column 10, lines 1-8), wherein a radiotelephone receiver handles a quadrature modulated signal (see page 2, lines 15-17 of the instant application '09/931,485'); and an intermediate frequency (IF) stage or receiving section for processing both the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system (column 5, lines 51-59); and wherein said IF stage has at least one of a variable gain amplifier (Figure 2, 44) for amplifying the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system and a quadrature demodulator (Figure 2, 47) for subjecting the intermediate-frequency signals that have been passed through the variable gain amplifier to quadrature demodulation for output (column 7, lines 29-37; column 9, lines 13-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the portable terminal apparatus of Camp to include a variable gain amplifier as taught by Tomiya. One of ordinary skill in the art would have been lead to make such a modification since the IF stage of the portable terminal can include at least one of a variable gain amplifier and a quadrature demodulator to provide amplification and quadrature demodulation to the IF signals of the first and second receiving systems.

Regarding claim 5, a portable terminal apparatus as claimed in claim 2, wherein Camp in view of Tomiya further disclose when said IF stage has said quadrature demodulator (Tomiya: Figure 2, 47), said signal processing system includes a correlator (Camp: column 5: lines 24-42 and lines 61-64; Figure 7: 650, 652) for demodulating said BPSK modulated signal inherently on the basis of an I signal or a Q signal of said second receiving system obtained by demodulating the intermediate-frequency signal by said quadrature demodulator (Tomiya: column 9, lines 42-67).

Regarding claim 6, a portable terminal apparatus as claimed in claim 2, wherein Camp in view of Tomiya further disclose when said IF stage has said variable gain amplifier and said quadrature demodulator, said portable terminal apparatus includes a control means for fixing gain of said variable gain amplifier at about a maximum gain in demodulating said BPSK modulated signal (Tomiya: column 9, lines 31-37; column 10, lines 25-32).

Regarding claim 7, a portable terminal apparatus as claimed in claim 2 mentioned above, wherein Camp in view of Tomiya further disclose when said IF stage has said variable gain amplifier and said quadrature demodulator, said portable terminal apparatus includes a control means for controlling gain of said variable gain amplifier to a maximum gain while maintaining linearity on the basis of a demodulated signal obtained by demodulating said BPSK modulated signal (Tomiya: column 9, lines 31-37; column 10, lines 25-32).

Regarding claim 8, a portable terminal apparatus as claimed in claim 2 mentioned above, wherein Camp in view of Tomiya further disclose when said IF stage has said variable gain amplifier and said quadrature demodulator, said portable terminal apparatus includes a control means for controlling gain of said variable gain amplifier to about a maximum gain even with

nonlinearity on the basis of a demodulated signal obtained by demodulating said BPSK modulated signal (Tomiya: column 9, lines 31-37; column 10, lines 25-32).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Camp in view of Tomiya as applied to claim 2 above, and further in view of U.S. Patent No. 6,839,334 by Krishnamoorthy et al, hereinafter Krishnamoorthy.

Regarding claim 4, a portable terminal apparatus as claimed in claim 2, wherein Camp in view of Tomiya further disclose when said IF stage has said quadrature demodulator (Tomiya: Figure 2, 47), said quadrature demodulator includes: a phase shifter for making an I signal and a Q signal of said second receiving system obtained by demodulating the intermediate-frequency signal by said quadrature demodulator coincide with each other in phase (Tomiya: column 9, lines 44-67; Figure 2, 47C); and said signal processing system includes a correlator for demodulating said BPSK modulated signal (Camp: Figure 7: 650, 652; column 5, lines 24-42 and lines 61-64).

Camp in view of Tomiya do not disclose a signal processing system including: a phase shifter and an adder for adding the I signal and the Q signal together that have been passed through said phase shifter.

Camp discloses a shared quadrature demodulator and signal processing system (demodulator/correlator/base band processor) (Camp: Figure 7: 650, 652), wherein the phase shifter included in the quadrature demodulator of Tomiya can be included as part of the signal processing system (Tomiya: Figure 2: 47, 47C).

Krishnamoorthy discloses a portable terminal apparatus comprising: a first receiving system or radio receiver (see Figure 6) for receiving a quadrature modulated signal and

converting the quadrature modulated signal into an intermediate-frequency signal for output, wherein a radiotelephone receiver handles a quadrature modulated signal (see page 2, lines 15-17 of the instant application '09/931,485'); and at least one of a variable gain amplifier (Figure 6, 601) for amplifying the intermediate-frequency signal of said first receiving system and a quadrature demodulator (Figure 6, 607) for subjecting the intermediate-frequency signal that has been passed through the variable gain amplifier to quadrature demodulation for output (column 10, lines 48-67), and an adder for adding the I signal and the Q signal together that have been passed through the quadrature demodulator (column 11, lines 1-8; see Figure 3), and correlators (Figure 3, 309) for demodulating said modulated signal on the basis of an addition output of said adder (column 7, lines 10-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the portable terminal apparatus of Camp in view of Tomiya to include a signal processing system including: a phase shifter and an adder for adding the I signal and the Q signal together that have been passed through said phase shifter as taught by Camp and Krishnamoorthy. One of ordinary skill in the art would have been lead to make such a modification since a shared quadrature demodulator and signal processing system can utilize a phase shifter and an adder can be including in a signal processing system to combine the I and Q signals to provide an addition output.

Response to Amendment

9. Examiner acknowledges the change of title as noted in the Amendment filed on January 5, 2005.

10. Accordingly, this action is **NON-FINAL**.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- 'An IF Digitizing Receiver for a Combined GPS/GSM Terminal' by K. Boehm et al

12. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for formal communications intended for entry)

Or call:

(703) 306-0377 (for customer service assistance)

Hand-delivered responses should be brought to: Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (703) 305-4302. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (703) 305-4895. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

LH
lh
January 19, 2005

FAN TSANG
SUPERVISORY PATENT EXAMINER
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